radiation into a visible light spectrum with a high spatial accuracy;

a photocathode, disposed within the camera housing along the optical path to convert the converted radiation into a stream of electrons representative of the image-bearing radiation;

an image amplifier disposed in the stream of electrons such that image amplifier electrostatically accelerates the stream of electrons, and an amplified detector disposed after the image amplifier and, upon input of the stream of electrons, being adapted to generate secondary electrons to further amplify the image represented thereby such that the amplified detector then converts secondary electrons into an electronic signal representative of the image.

44. (new) A radiation imaging system, comprising a radiation source that projects radiation towards an object, thereby creating image-bearing radiation from the object towards the imaging system, and

an imaging system, which according to claim 43 has a solid radiation bearing detector comprising a scintillator which efficiently converts the image-bearing radiation into a visible light spectrum.

45. (new) An imaging system, which defines an optical path therein, for capturing an image from the image-bearing radiation, the imaging system comprising a solid radiation bearing detector

disposed in the optical path, comprising a very thin, about 50 to 100 micro-meter thick, and very heavy scintillator with a density greater than 6, which efficiently converts the image-bearing radiation into a visible light spectrum with a high spatial accuracy;

a photocathode, disposed within the camera housing along the optical path to convert the converted radiation into a stream of electrons representative of the image-bearing radiation;

an image amplifier disposed in the stream of electrons such that image amplifier electrostatically accelerates the stream of electrons, and an amplified detector disposed after the image amplifier and, upon input of the stream of electrons, being adapted to generate secondary electrons to further amplify the image represented thereby such that the amplified detector then converts secondary electrons into an electronic signal representative of the image.

46.(new) A radiation imaging system, comprising a radiation source that projects radiation towards an object, thereby creating image-bearing radiation from the object towards the imaging system, and

an imaging system, which according to claim 45 has a solid radiation bearing detector, comprising a very thin, about 50 to 100 micro-meter thick, and very heavy scintillator with a density greater than 6, which efficiently converts the image-bearing radiation into a visible light spectrum with a high spatial

accuracy.

47. (new) The imaging system according to claim 46, wherein the image amplifier is adapted to selectively electronically de-magnify the image-bearing radiation and thus adjust a resolution of the image.

48. (new) The imaging system according claim 47, wherein the image amplifier is dynamically selectable to adjust de-magnification so as to govern an area of an object to be imaged.

49. (new) The radiation imaging system according to claim 46, wherein the radiation source is adapted to electronically shift between a plurality of dynamically-selectable positions such that the image transmitted by the image-bearing radiation changes for each of the plurality of positions.

50. (new) The radiation imaging system according to claim 49, wherein the radiation source electronically shifts between two dynamically selectable positions to generate stereo pairs of three-dimensional images and to select the line-of-view of an object of interest to bypass other shadowing objects.

51. (new) The radiation imaging system according to claim 49, wherein the radiation source is continuously deflected producing a plurality of radiation shadows that can be interactively "focussed"

to various levels within the object.

52. (new) The radiation imaging system according to claim 49, wherein the radiation source projects divergent rays of the radiation and has a spot size smaller than a resolution of the radiation imaging system.

53. (new) The imaging system according to claim 45, further comprising:

filtering means for filtering the image-bearing radiation consecutively through a plurality of filters thus creating a plurality of sub-images;

analysis means to distinguish between the changes of sub-images due to the filtering of the radiation and due to the object motion during and between the exposures; and

correcting means for correcting the changes of the plurality of sub-images due to the object motion and correlating the plurality of sub-images into a color image.

54. (new) The radiation imaging system according to claim 46, wherein the imaging system corrects for motion in a color image generated by capturing two or more consecutive sub-images, the imaging system further comprising,

calculation means for calculating the shift vector between the two or more consecutive sub-images, using lists of characteristic quantities computed from the images;

mapping means for mapping a coordinate transformation of a first image into a second image of the two or more consecutive sub-images;

computing means for computing corresponding transformations of the two or more consecutive sub-images by interpolation; and

reconstruction means for reconstructing the image from the two or more consecutive sub-images.

55. (new) The radiation imaging system according to claim 54, further comprising processing means for differentiating between foreground and non-uniform background in the plurality of radiation shadows such that the non-uniform background can be subtracted from the image.

56. (new) The radiation imaging system according to claim 55, wherein the processing means is adapted to replace one background with a second background.

57. (new) The imaging system according to claim 45, wherein the amplified detector has a radiation-stable "dead layer" created by ion implantation.

58. (new) The imaging system according to claim 46, further comprising optic means disposed within the camera housing for collecting the image-bearing radiation and defining the optical path, where the optic means is integral with the scintillator.

59. (new) The radiation imaging system according to claim 46, wherein the scintillator has a density of at least 7.5 grams per cubic centimeter.

60. (new) The imaging system according to claim 45, comprising

a solid radiation bearing detector which is a flexible optic light guide system made of many tiny about 5 micro-meter diameter fibers, and a light source thereby creating image bearing radiation from the reflected light from the object;

a photocathode which converts the radiation bearing light, reflected from object and transmitted through the fibre optic light guide system into streams of electrons, which can be gated according to their arrival time at the high voltage electrodes;

an image amplifier disposed in the stream of electrons such that the image amplifier electrostatically accelerates or decelerates the stream of electrons according to their arrival time; and

an amplified detector disposed after the image amplifier and, upon input of the stream of electrons, being adapted to generate secondary electrons to further amplify the image represented thereby such that the amplified detector then converts secondary electrons into an electronic signal representative of the image.

61. (new) The imaging system according to claim 60, wherein the

photocathode is fabricated of gallium-arsenide, which, with the scintillator removed, converts the infrared radiation bearing light, reflected from the object and transmitted through the fibre optic fight guide system, into streams of electrons, which are gated according to their arrival time at the high voltage -electrodes, to analyze the time dependent images at the detector, after an initial flash from the light source has been emitted and reflected.

62. (new) The imaging system according to claim 60, wherein the image amplifier is adapted to selectively electronically magnify the image-bearing radiation as measured at the detector and thus adjust a resolution of the image.

63. (new) The imaging system according to claim 62, wherein the image amplifier is dynamically selectable to adjust magnification so as to govern an area of an object to be imaged.

64. (new) The imaging system according to claim 45, with the scintillator removed, further comprising:

filtering means for filtering the image-bearing radiation consecutively through a plurality of wavelength filters which allows only light within preselected ranges of wavelengths to pass, so that a "colored"' image can be formed using these sub-images of different wavelengths, analysis means to distinguish between the changes of sub-images due to the filtering of the fight of

different wavelengths and due to the object motion during and between the exposures; and correcting means for correcting the changes of the plurality of sub-images due to the object motion and correlating the plurality of sub-images into a color image.

Applicant, having amended the claims, believes that the present application is in condition for allowance. Applicant respectfully requests reconsideration and allowance of the present application. The Examiner is invited to call the Applicant's undersigned attorney should he feel that such a call would further the prosecution of the present application.

Respectfully submitted,
Min Chen, et al.

By Stephen G. Matzuk, Reg. No. 29,328
P. O. Box 767
Boston, MA 02102
(617) 248 9757

Date 18 March 1999